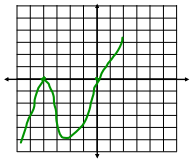
WARM UP

1) Write the polynomial in standard form with zeros at -3, 2 and 0.

2) Find a polynomial which represents the graph:



3) Find the zeros and state the multiplicy:
$f(x) = x^2(x+3)(x-7)^3$

4) Simplify and classify it by degree and number of terms:

$x(x - 5)^2 - x(3x + 7)$

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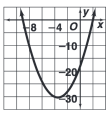
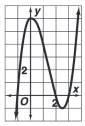
1. $x^2 + x - 6$
3. $x^3 - 7x^2 + 15x - 9$
5. $x^3 + 10x^2 + 25x$
7. $x(x - 6)(x + 6)$
9. $5x(2x^2 - 2x + 3)$
11. $x(x + 4)^2$
13. about 24.2, -1.4, 0, -5, 1
15. a. $h = x$, $\ell = 16 - 2x$, $w = 12 - 2x$
    b. $V = x(16 - 2x)(12 - 2x)$

17. 2, -9



19. $-1, 2, 3$



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21. $y = x^3 - 18x^2 + 107x - 210$
22. $y = x^3 + x^2 - 2x$
23. $y = x^3 + 9x^2 + 15x - 25$
24. $y = x^3 - 9x^2 + 27x - 27$
25. $y = x^3 + 2x^2 - x - 2$
26. $y = x^3 + 6x^2 + 11x + 6$
27. $y = x^3 - 2x^2$
28. $y = x^3 - \frac{7}{2}x^2 - 2x$
29. -3 (mult. 3)
30. 0, 1 (mult. 3)
31. $-1, 0, \frac{1}{2}$
32. $-1, 0, 1$
33. 4 (mult. 2)
34. 1, 2 (mult. 2)
35. $-\frac{3}{2}$, 1 (mult. 2)
36. -1 (mult. 2), 1, 2

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6.2 Polynomials and Linear Factors Part 2

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Finding zeros, relative maximums and relative minimums from polynomial.

zero - where a graph crosses the x-axis
relative maximum - a high point of a graph
relative minimum - a low point of a graph

Use the zero product property from factored form to find the zeros of a polynomial.

1) Find the zeros of $y = x(x - 2)(x + 3)$

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Now let's graph this on the calculator to find the relative max and relative min.

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2) Use your graphing calculator to find the relative maximum, relative minimum and zero's of the function.

$$f(x) = 2x^3 - 23x^2 + 78x - 72$$ (↙, ↗)

min @ (5.14, −7.14)

max @ (2.53, 10.51)

x = 6, 4, 1.5

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Multiplicity

The number of times a zero occurs for a polynomial

Find the zeros and state their multiplicity.

3) $y = x^4 + 3x^3 + 2x^2$

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29 $y = (x+3)^3$

$(x+3)(x+3)(x+3)$

$x+3=0$ $x+3=0$ $x+3=0$

$x = -3$, multiplicity of 3

Nov 3-10:55 AM

(31) $y = 2x^3 + x^2 - x$

$2x^3 + x^2 - 1x = 0$

$x(2x^2 + x - 1) = 0$

$x(x+1)(2x-1) = 0$

$x = 0 \quad x + 1 = 0 \quad 2x - 1 = 0$

$x = -1 \quad x = \frac{1}{2}$

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Writing a polynomial equation.

Write a polynomial function in standard form with the given zeros.

4) -2 with a multiplicity of 3

$x = -2$

$x + 2 = 0$

$y = (x+2)^3$

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(21) $x = 5, 6, 7$

$x = 5 \quad x = 6 \quad x = 7$

$x - 5 = 0 \quad x - 6 = 0 \quad x - 7 = 0$

$y = (x-5)(x-6)(x-7)$

$y = (x^2 - 11x + 30)(x - 7)$

	x^2	$-11x$	$+30$
x	x^3	$-11x^2$	$+30x$
-7	$-7x^2$	$+77x$	-210

$y = x^3 - 18x^2 + 107x - 210$

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Check your understanding
Click the check mark to go to website review.

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HW 6.2 - PART 2

p. 318 (41 - 48 omitting 46, 51 - 56)

For 54 - 56, write in factored form, state the end behavior, and multiplicity. Sketch graph.

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Write each function in standard form.

41. $y = (x + 1)(x - 4)(3 - 2x)$

42. $y = (x + 7)(5x + 2)(x - 6)^2$

Write each function in factored form. Check by multiplication.

43. $y = 3x^3 - 27x^2 + 24x$

44. $y = -2x^3 - 2x^2 + 40x$

45. $y = x^4 + 3x^3 - 4x^2$

46. $y = \frac{1}{2}x^3 - \frac{1}{8}x$

Find the relative maximum, relative minimum, and zeros of each function.

47. $y = 2x^3 - 23x^2 + 78x - 72$

48. $y = x^4 + 3x^3 - x^2 - 3x$

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Write a polynomial function in standard form with the given zeros.

51. $5, -2, 0$ **52.** 7 multiplicity 3 **53.** $-2, -1, 3, 4$

For each function, determine the zeros. State the multiplicity of any multiple zeros.

54. $y = (x + 4)(x - 5)^3$ **55.** $f(x) = x^4 + 2x^3 + x^2$ **56.** $f(x) = x^3 - 36x$

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